What is Light Manufacturing?

The Planning Commission's preliminary list of uses defines light manufacturing as follows:

> "Manufacturing, light" means an establishment engaged in the mechanical, physical, or chemical transformation of materials, substances, or components into new products that is of a lower intensity and cleaner than heavy manufacturing establishments. Light manufacturing facilities do not generate excessive noise, particulate matter, vibration, smoke, dust, gas, fumes, odors, radiation, or other nuisances. Light manufacturing facilities require only a small amount of raw materials, area and power, to produce items of relatively high value per unit weight. Examples include manufacture of clothes, jewelry, furniture, computer hardware and software, medical instrumentation, and consumer electronics, winery/brewery, as well as research and development facilities and biotechnology.
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> May include NAICS Sectors 31-33 (Manufacturing). Also may include NAICS 54171 (Research and Development in the Physical, Engineering and Life Sciences).

Light manufacturing likely would include:

- **Advanced manufacturing** – the use of innovative technology to improve products or processes.

  Paul Fowler of the National Association of Advanced Manufacturing (NACFAM) has defined advanced manufacturing as follows:

  > "The Advanced Manufacturing entity makes extensive use of computer, high precision, and information technologies integrated with a high performance workforce in a production system capable of furnishing a heterogeneous mix of products in small or large volumes with both the efficiency of mass production and the flexibility of custom manufacturing in order to respond quickly to customer demands."

  A concise definition of advanced manufacturing offered by some is manufacturing that entails rapid transfer of science and technology (S&T) into manufacturing products and processes.

  The manufacturing process technologies described in definitions of advanced manufacturing include: computer technologies (e.g., CAD, CAE, CAM); high performance computing (HPC) for modeling, simulation and analysis; high precision technologies; advanced robotics; artificial intelligence; 3-D printing; automation; sustainable and green processes and technologies; and scalability. Although research and development was not explicitly included in most definitions, the innovative technologies listed by many are most likely the result of extensive research and development.

  Several sources pointed out that any definition of advanced manufacturing will need to change with the changing times, and that the definition will vary for different companies and different industries.

  Current advanced manufacturing products might include: pharmaceuticals, medical devices and equipment, measuring/control instruments, industrial machinery, electronic components, and other scientific-related products.

- **Custom/Artisanal Manufacturing --** typically smaller businesses serving niche and specialty markets, including: artisan bakeries and other foods (chocolate, oils, spices); beverages (coffee, tea, wineries, breweries); textiles, apparel, and accessories; custom products (furniture, woodwork, ironwork, windows, cabinets, countertops, sign-making, custom props for photoshoots, etc.); printing and publishing; and fabricated metal products.

- **Manufacturing of clean/green products --** such as green packaging, green building materials, and energy-related products (solar, battery/storage, bio and other sustainable fuels, LED-lighting, etc.), emission control technology and filtration.

- **Digital media and information technology --** businesses focused on the manufacture of computer hardware/software

Sources: Wikipedia and "Market Assessment of Potentials for Business Mix/Light Industrial Uses West Oakland Specific Plan" prepared for City of Oakland